Vulnerability Assessments

A Guide

Vulnerability assessments synthesize and integrate scientific information, quantitative analyses, and expert-derived information in order to determine the degree to which specific resources, ecosystems, or other features of interest are susceptible to the effects of climate change.[1]

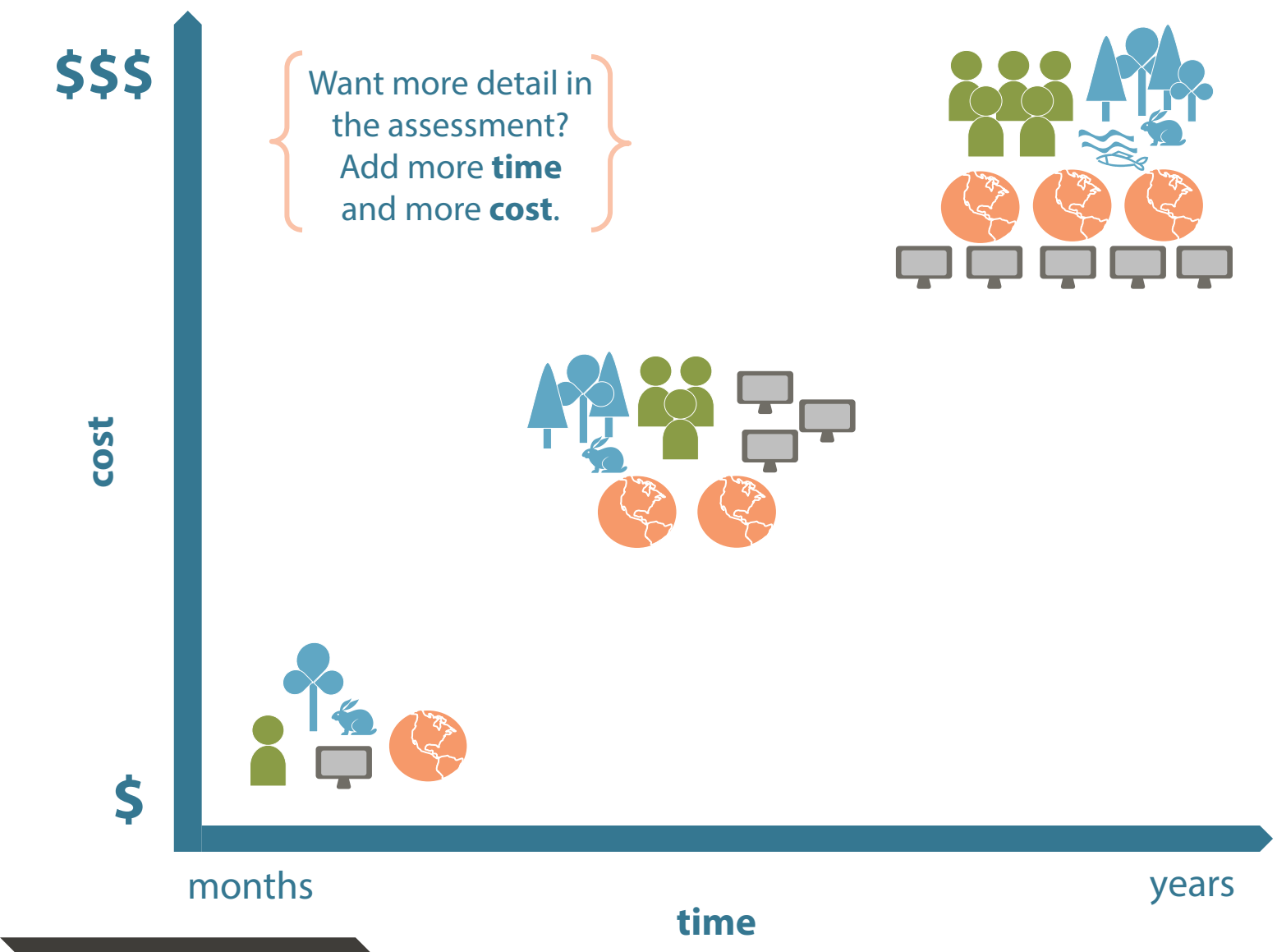
The Process[2]

1. Determine objectives and scope
2. Gather relevant data and expertise
3. Assess components of vulnerability
4. Apply assessment in planning and management

Before beginning a vulnerability assessment, evaluate what information already exists and identify knowledge gaps that may need to be filled.[3]

For more information on beginning a vulnerability assessment, see the multi-agency guide, *Scanning the Conservation Horizon*.

Time and Cost of Vulnerability Assessments



Legend

What is the **scope** of the assessment? This can be anything from evaluating a few resources to assessing a wide variety of species and ecosystems. The more detailed the assessment, the higher the cost and time commitment involved. It's important to identify the scope that bests suits the management questions of interest.[3]

What is the **geographic scale** of the assessment? The scale could be a small area, an entire state, or even a larger region. It's important to determine what scale is appropriate for informing management decisions.[3]

Who will be **involved** with the assessment? Assessments can involve a small group of scientists and managers, or they can be larger, more comprehensive groups including stakeholders, agencies, and many other partners. It's important to include a team of experts with a range of disciplines relevant to the scope of the assessment.[3]

What type of **modeling** will be used in this assessment? This can be as simple as doing a literature review to learn about past and future climates, or it can involve working with experts to evaluate many different models and scenarios. It's important to have an understanding of changes in the distant and recent past, as well as a range of projected future changes.[3]

Not all vulnerability assessments are equal. The assessment should address specific resources of concern, be applied at an appropriate scale, and consider budgets, timelines, and intended applications.

Examples

These are just a few examples of vulnerability assessments being done around the country. For more examples, check out the National Wildlife Federation report, *Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment*.

An Assessment of Climate Change and Vulnerability of Wildlife in the Sky Islands of the Southwest

30 terrestrial vertebrate species

Local, the Coronado National Forest, Arizona, forest-level

Small group of researchers and managers from the region

Scientific literature review and Climate Wizard for historical and projected trends in climate

The purpose of this project was assess relative vulnerability in order to assist wildlife managers in setting conservation priorities under a changing climate.

This assessment used a pilot version of the decision-support tool, System for Assessing Vulnerability of Species (SAVS). SAVS can be used to assess the impact of expected climate change effects for terrestrial vertebrates.

Ecosystem Vulnerability Assessment and Synthesis: A Report from the Climate Change Response Framework Project in Northern Wisconsin

Forest ecosystems

Sub-regional, Wisconsin

Emphasis on collaboration with universities, federal and state governments, and not-for-profit organizations

Downscaled climate data along with a species distribution model and a process model

The purpose of this project was to identify forest ecosystem vulnerabilities and use these vulnerabilities in later projects to identify and implement on-the-ground adaptation strategies.

Pacific Northwest Climate Change Vulnerability Assessment

Species and habitats

Regional, Pacific Northwest, spanning multiple states and provinces

Collaboration among researchers, managers, and planners within universities, federal and state governments, and not-for-profit organizations

Downscaled climate data based on multiple model simulations

The purpose of this project is to provide a resource for planners, with information on how species and systems will likely respond to climate change. It will also answer scientific questions about the potential impacts of climate change on natural resources.

Applications

A vulnerability assessment is not an endpoint, but a source of information to incorporate into planning and decision-making.[2]

- **Guides** or **resources** to inform the management process
- Identify **priorities** and **conservation actions**
- Develop **adaptation strategies** and on-the-ground **actions**
- Incorporate into **forest or wildlife plans** and **NEPA** documents

[1]Joyce, L.A., Janowiak, M.K. (July 01, 2011). Climate Change Assessments. U.S. Department of Agriculture, Forest Service, Climate Change Resource Center. http://www.fs.fed.us/ccrc/topics/assessments/vulnerability-assessments.shtml

[2]Glick, P., B.A. Stein, and N.A. Edelson, editors. 2011. Scanning the Conservation Horizon: A Guide to Climate Change Vulnerability Assessment. National Wildlife Federation, Washington, D.C.

[3]Brandt, L., et al. *In prep*. Climate Change Vulnerability Assessments: A Brief Guide for Forest Managers.